



Australian Bureau of Statistics

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INTRODUCTION

On 13 May 2009, the Australian Statistician announced the full re-instatement of the Labour Force Survey (LFS) sample, offsetting the July 2008 reduction. As foreshadowed in **Labour Force, Australia** (cat. no. 6202.0), the sample is being re-instated progressively from September to December 2009. The December 2009 estimates will be the first produced under the fully re-instated sample, and will be released on 15 January 2010.

This edition of the information paper outlines:

- the expected sample size and new sampling fractions for December 2009 onwards;
- the impact on estimates, LFS products and associated surveys; and
- information on methodological changes resulting from the re-instated sample.

BACKGROUND

The ABS reviews the LFS sample design every five years following the five-yearly Census of Population and Housing (Census). While the design has remained broadly the same since the introduction of the LFS, the review ensures that the survey continues to accurately reflect the geographic distribution of the Australian population, and remains efficient and cost-effective.

The 2006 LFS sample design, which took into account results from the 2006 Census, was implemented from November 2007 to June 2008. The 2006 sample design resulted in a smaller sample size, taking advantage of gains from the earlier introduction of the composite estimation methodology. Standard errors for key LFS estimates were maintained at the levels achieved under the previous sample design (except for the Northern Territory where they were improved). For details refer to the first edition of this Information Paper.

In July 2008, as one of a range of ABS savings initiatives for 2008-09, there was a 24% reduction in the LFS sample size relative to the June 2008 sample size. For details of the sample reduction refer to the second edition of this Information Paper.

On 13 May 2009, the Australian Statistician announced that the ABS would restore the 24% sample reduction.

2009 SAMPLE RE-INSTATEMENT

The ABS has made every effort to re-instate the sample in the shortest time possible, taking into account the potential impact on the volatility of key estimates. Three options were considered: an eight month phase-in period (the usual period for introducing new sample); a four month phase-in period; and a one month phase-in period. It was determined that the sample could be re-instated over a four month period. The chosen approach aims to accommodate the workload surge and to minimise volatility in the LFS estimates.

The private dwelling sample in larger urban centres and less remote areas, and the sample of Indigenous community dwellings, will be progressively re-instated each month from September to December 2009. This represents 87% of the sample being re-instated. The remaining 13% (in the more remote, less populated areas and for non-private dwellings) will be fully re-instated in October 2009.

The December 2009 LFS estimates, to be released on 15 January 2010, will be the first produced under the fully re-instated sample.

EXPECTED SAMPLE SIZE

Table 1 shows the number of fully responding persons (actual or expected) in the LFS sample at various points in time since the implementation of the 2006 sample design, specifically:

- June 2008 - the first month in which the 2006 sample design was fully implemented;

- July 2008 - the month in which the 24% sample reduction was fully implemented;
- August 2009 - the last month under the 24% sample reduction; and
- December 2009 - the first month in which the sample re-instatement will be fully implemented.

The sample re-instatement is expected to result in approximately 56,000 persons fully responding to the LFS in December 2009, covering about 1 in 315 (0.32%) of the civilian population aged 15 years and over. Thereafter, the sample size will gradually increase in line with population growth until the sample is redesigned following the 2011 Census.

TABLE 1. LFS FULLY RESPONDING PERSONS

	June 2008 actual	July 2008 actual	August 2009 actual	December 2009 expected
New South Wales	13 000	9 600	10 200	13 500
Victoria	11 300	8 800	8 800	11 700
Queensland	9 700	7 300	7 300	9 800
South Australia	6 400	4 900	4 800	6 300
Western Australia	6 300	4 600	4 900	6 500
Tasmania	3 600	2 700	2 900	3 800
Northern Territory	2 300	1 900	1 700	2 100
Australian Capital Territory	2 200	1 700	1 700	2 200
Australia	54 900	41 500	42 200	56 000

NEW SAMPLING FRACTIONS

Table 2 shows the state and territory sampling fractions from the 2006 sample design, the July 2008 reduced sample and the December 2009 fully re-instated sample. The three sets of sampling fractions are an output from the 2006 sample design process. As can be seen, the sampling fractions for the fully re-instated sample revert to those for the 2006 sample design. Table 2 also shows the sampling fractions from earlier sample designs.

TABLE 2. SAMPLING FRACTIONS

	1981	1986	1991	1996	2001	2006	July 2008	Dec 2009
New South Wales	1 in 200	1 in 230	1 in 277	1 in 300	1 in 321	1 in 380	1 in 499	1 in 380
Victoria	1 in 200	1 in 230	1 in 242	1 in 257	1 in 270	1 in 336	1 in 441	1 in 336
Queensland	1 in 140	1 in 160	1 in 195	1 in 222	1 in 239	1 in 315	1 in 415	1 in 315
South Australia	1 in 100	1 in 115	1 in 139	1 in 147	1 in 149	1 in 184	1 in 241	1 in 184
Western Australia	1 in 100	1 in 115	1 in 146	1 in 160	1 in 165	1 in 246	1 in 324	1 in 246
Tasmania	1 in 60	1 in 70	1 in 75	1 in 83	1 in 90	1 in 103	1 in 135	1 in 103
Northern Territory	1 in 100	1 in 115	1 in 75	1 in 85	1 in 98	1 in 54	1 in 68	1 in 54
Australian Capital Territory	1 in 100	1 in 115	1 in 75	1 in 85	1 in 86	1 in 117	1 in 154	1 in 117

IMPACT ON QUALITY OF ESTIMATES

The most commonly used measure of the reliability of estimates is their relative standard errors (RSEs). The RSE is the standard error divided by the estimate. For the fully re-instated sample, the RSEs for estimates of employment and unemployment at the national, state and territory level are expected to be approximately 15% lower, on average, than those for the

reduced sample. As the sample is re-instated from September to December 2009, the RSEs will progressively decrease.

Table 3 shows the target RSEs for the 2006 sample design, for the reduced sample from July 2008, and for the re-instated sample from December 2009. As can be seen, the target RSEs for the fully re-instated sample revert to those for the 2006 sample design.

TABLE 3. LFS RELATIVE STANDARD ERRORS

	EMPLOYMENT RSE (%)			UNEMPLOYMENT RSE (%)		
	2006 Target RSE(a)	2008 Target RSE	2009 Target RSE	2006 Target RSE(a)	2008 Target RSE	2009 Target RSE
New South Wales	0.8	0.9	0.8	5.0	5.7	5.0
Victoria	0.8	0.9	0.8	5.3	6.1	5.3
Queensland	0.9	1.0	0.9	5.7	6.6	5.7
South Australia	1.1	1.3	1.1	6.8	7.7	6.8
Western Australia	1.0	1.1	1.0	7.1	8.1	7.1
Tasmania	1.5	1.7	1.5	8.3	9.5	8.3
Northern Territory	2.6	3.0	2.6	13.4	15.1	13.4
Australian Capital Territory	1.3	1.5	1.3	13.9	16.0	13.9
Australia	0.4	0.4	0.4	2.6	2.9	2.6

IMPACT ON LFS PRODUCTS

Key monthly estimates from the LFS are published in **Labour Force, Australia** (cat. no. 6202.0). More detailed estimates are presented in **Labour Force, Australia, Detailed - Electronic Delivery** (cat. no. 6291.0.55.001) and **Labour Force, Australia, Detailed, Quarterly** (cat. no. 6291.0.55.003).

The full sample re-instatement will decrease the standard errors on LFS estimates by approximately 15%. This will be evident from the December 2009 issue onwards, where there will be a decrease in the number of estimates bearing the annotation "subject to sampling variability too high for most practical purposes".

Gradual improvement in the standard errors will also be evident in the September to November 2009 issues of LFS products as the sample progressively increases. An additional short term impact on the standard errors is expected in October 2009 when the sample is re-instated in more remote, less populated areas and for non-private dwellings (13% of the sample). This one-off re-instatement of 13% of the sample reduces the efficiency of the LFS composite estimation methodology as there will be a lower than normal proportion of common selections between September and October 2009. Therefore, the standard errors for month-to-month movement estimates will be slightly higher in October 2009 than in other months.

LFS standard errors are statistically modelled as a function of the monthly estimates. The standard error models will be modified to take account of the sample re-instatement. These modified models will be used to populate the standard error tables in **Labour Force, Australia** (cat. no. 6202.0). The modified models will also be incorporated in **Labour Force Survey Standard Errors, Datacube** (cat. no. 6298.0.55.001), to be released on 8 October 2009. This product allows users to calculate the standard error for any LFS estimate.

IMPACT ON ASSOCIATED SURVEYS

The ABS conducts supplementary surveys using the LFS sample. Each supplementary survey covers a different topic, and each topic is conducted on either an annual or less frequent basis. Table 4 shows the supplementary surveys conducted during the period of the reduced sample (from July 2008 to August 2009) and during the sample re-instatement (from September to December 2009).

TABLE 4. SUPPLEMENTARY SURVEYS

Supplementary Survey	ABS cat. no.	Frequency	Issue	Release date
Job Search Experience	6222.0	annual	July 2008	Jan 2009
Employee Earnings, Benefits & Trade Union Membership	6310.0	annual	Aug 2008	April 2009
Underemployed Workers	6265.0	annual	Sep 2008	Feb 2009
Persons Not in the Labour Force	6220.0	annual	Sep 2008	Mar 2009
Labour Mobility and Intentions, WA	6209.5	annual	Oct 2008	Jun 2009
Forms of Employment	6359.0	annual	Nov 2008	Jun 2009
Locations of Work	6275.0	6 yearly	Nov 2008	May 2009
Labour Force Experience	6206.0	2 yearly	Feb 2009	Aug 2009
Environmental Issues: Waste Management & Transport Use	4602.0.55.002	first issue	Mar 2009	Nov 2009
Children's Participation in Cultural & Leisure Activities	4901.0	3 yearly	April 2009	Oct 2009
Education and Work	6227.0	annual	May 2009	Nov 2009
Job Search Experience	6222.0	annual	July 2009	Dec 2009
Employee Earnings, Benefits & Trade Union Membership	6310.0	annual	Aug 2009	April 2010
Underemployed Workers	6265.0	annual	Sep 2009	Feb 2010
Persons Not in the Labour Force	6220.0	annual	Sep 2009	Mar 2010
Forms of Employment	6359.0	annual	Nov 2009	April 2010
Working Time Arrangements	6342.0	3 yearly	Nov 2009	May 2010

For those supplementary surveys conducted during the period of the reduced sample, the sample size was up to one-third smaller than the sample when the survey was previously conducted. As a result, the standard errors on the estimates increased.

The sample re-instatement will decrease the standard errors on estimates for all supplementary surveys (with the exception of the Northern Territory which had a large increase in sample size under the 2006 sample design).

The ABS also conducts a multi-purpose household survey (MPHS) using the LFS sample. The MPHS includes a wide range of labour-related and other topics including: barriers and incentives to labour force participation, retirement and retirement intentions, work related injuries, crime victimisation, and household use of technology. The MPHS sample size will be retained, with the proportion of the LFS sample selected in the MPHS being reduced accordingly. The ABS expects the sample re-instatement to have a minimal impact on the MPHS.

OTHER CHANGES

LFS estimates are calculated in such a way as to add up to independent estimates of the civilian population aged 15 years and over (population benchmarks). The weighting methodology used in the LFS requires at least one respondent in each benchmark cell.

Under the reduced sample, the probability of some benchmark cells having no respondents increased (compared with the probability under the 2001 sample design). To address this, the

ABS combined some single year age groups within the 15 to 24 years age range for the balance of South Australia, the balance of Western Australia and the city of Hobart. For details refer to the second edition of this Information Paper.

After the sample is re-instated, the probability of these benchmark cells having no respondents will be reduced, but not entirely removed. Therefore, these changes will remain in place until the sample is again redesigned (following the 2011 Census).

MORE INFORMATION

2006 sample design, refer to **Information Paper: Labour Force Survey Sample Design, Nov 2007** (cat. no. 6269.0).

LFS sample reduction, refer to **Information Paper: Labour Force Survey Sample Design, Nov 2007 (Second edition)** (cat. no. 6269.0).

Implementation of LFS Statistical Regions, refer to **Information Paper: Regional Labour Force Statistics, February 2009** (cat. no. 6262.0).

Maps of LFS Statistical Regions, refer to **Australian Labour Market Statistics, July 2009** (cat. no. 6105.0).

LFS estimates, refer to **Labour Force, Australia** (cat. no. 6202.0).

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About this Release

This is the third release of Information Paper: Labour Force Survey Sample Design, Nov 2007 (cat. no. 6269.0). This edition provides information on the re-instatement of the Labour Force Survey (LFS) sample over the period September to December 2009. The fully re-instated sample takes effect from the December 2009 survey (estimates released on 15 January 2010).

The first edition of this Information Paper, released on 28 November 2007, provided detailed information on the 2006 LFS sample design and changes made to the design over the history of the survey. The second edition, released on 25 July 2008, provided information on a substantial reduction in the size of the 2006 LFS sample which took effect from the July 2008 survey to the August 2009 survey.